



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 7**

11201 Renner Boulevard  
Lenexa, Kansas 66219

**SEP 20 2013**

Mr. Brian Power  
Area Environmental Manager  
Republic Services, Inc.  
13570 St. Charles Rock Road  
Bridgeton, Missouri 63044

Re: EPA Approval with Conditions of the Gamma Cone Penetration Test Work Plan,  
Revision 1, September 10, 2013

Dear Mr. Power:

The U.S. Environmental Protection Agency has reviewed the subject document and the associated Gamma Cone Penetration Test (GCPT) health and safety plan. The EPA requires health and safety plans whenever field work is done under agency oversight; however, the agency does not approve health and safety plans.

The agency considered the Missouri Department of Natural Resource's comments enclosed with this letter. In the interest of expediting performance of this work, the agency is not addressing the issues of radiological background levels, the replacement of monitoring well D-14 or the definition of radiologically impacted material (RIM) within the context of the North Quarry Contingency Plan. The 5 pCi/g plus background cleanup standard has been used extensively at other radiological sites.

The agency finds the revised work plan to be acceptable and hereby approves it with the conditions below, which are incorporated from the comments in the enclosed MDNR letter. Provide the agency a revised final document incorporating these changes within seven (7) days of your receipt of this letter.

Condition #8, Response to Comment 17: In addition to using PVC-38 and PVC-28 to correlate the readings obtained by the GCPT sensor, a location with a gamma response similar to the RIM threshold of 5 pCi/g plus background should be chosen. MDNR's suggestion in its letter to the agency of September 18, 2013, to use PVC-36 for this purpose is acceptable.

Condition #9, Response to Comment 20: There should be no visible dust emissions from vegetation-clearing activities, including dust that may be generated from the ground surface due to vegetation-clearing equipment.

Condition #10, Response to Comment 25: Republic may abandon sounding holes by filling them from the surface with short hydrated lifts of bentonite pellets. Per MDNR's letter referenced above, no variance will be required from Missouri Well Construction Rules. Bentonite-coated gravel shall not be used to abandon these holes, nor shall any materials from equipment decontamination be placed in these holes as suggested in Section 3.4.2.1 of the revised work plan.



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Approval of this work plan does not constitute approval of the September 9, 2013, memorandum from Paul Rosasco to Dan Feezor titled "Definition of Radiologically-Impacted Material (RIM)" which attempts to provide information on the effects of a subsurface smoldering event on RIM.

The agency expects Republic to begin work on the Phase 2 Investigation Work Plan to encompass the collection of core samples before or concurrent with the field work for the Phase 1 GCPT work so that the core samples can be collected as soon as possible after the GCPT work is complete. The Phase 2 work plan shall incorporate your responses to the August 20, 2013, comments to the extent those comments apply to the Phase 2 work.

We expect Republic to begin mobilizing so that field work begins no later than October 10, 2013. Please provide the agency with one week's notice prior to beginning field work so agency personnel can be on-site to observe the work.

Sincerely,



Cecilia Tapia  
Director  
Superfund Division

Enclosures

cc: Leanne Tippet-Mosby, MDNR  
Jonathan Garoutte, MDHSS  
Joseph Bindbeutel, Missouri Attorney General's Office



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

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SEP 18 2013

Ms. Cecilia Tapia  
Division Director, SUPR  
EPA Region 7  
11201 Renner Boulevard  
Lenexa, KS 66219

RE: North Quarry Contingency Plan – Part 2, Bridgeton Landfill, LLC, Permit Number 0118912, St. Louis County – Response to August 20, 2013 Comments Gamma cone Penetration Test Work Plan and Gamma Cone Penetration Test Health and Safety Plan; Gamma Cone Penetration Test (GCPT) Work Plan, Revision 1; Gamma Cone Penetration Test (GCPT) Health and Safety Plan, Revision 1.

Dear Ms. Tapia:

The Missouri Department of Natural Resources (MDNR), with input from the Missouri Department of Health and Senior Services (letter enclosed), has reviewed the above referenced documents and recommends that the U.S. Environmental Protection Agency approve these documents with the conditions listed below which are identified by the original comment number (letter dated August 20, 2013). Your conditional approval will allow the expedited start of the GCPT investigation phase (Phase 1) which will identify a suitable location for the isolation barrier which will allow for timely completion of the isolation barrier design submittal. It is noted that a Phase 2 investigation involving core sampling will be conducted per the GCPT Work Plan Revision 1. Many of our original comments will be addressed in the future Phase 2 Investigation Work Plan as noted in the response to comments.

**Condition #1: (Comment #1) Definition of Radiological Impact Material (RIM).** We agree with the suggestion in the response that Phase 1, the GCPT study, should move forward while we work to clarify the proposal of using 5 pCi/g above background to define radiologically impacted material and potential further review of the supporting evaluation presented in the memorandum submitted by Engineering Management Support, Inc. dated September 9, 2013. We expect to continue discussions and evaluation of this issue during implementation of the isolation barrier investigation.

**Condition #2: (Comment #2) Calculating Background.** The sixth sentence of the second paragraph of the response states, "If the existing background concentrations already established are deemed unacceptable, new background concentrations for the eight radionuclides will have to be reassessed." We would like to clarify that existing background concentrations are not deemed "unacceptable" but instead we are requesting that a statistically appropriate background concentration be calculated based on an appropriate number of samples. Finally, the need for surface gamma measurements discussed in the third to last paragraph of the response is questioned; please provide further support for the purpose of this in the Phase 2 Investigation Work Plan.

**Condition #3: (Comment #3) *Core Samples*.** It is recognized that a Phase 2 coring investigation will be conducted as discussed. The issues raised in the original comment can be addressed in the Phase 2 Investigation Work Plan.

**Condition #4: (Comment #4) *Replacing Well D-14*.** We agree with the statement in the response, "Upon direction of MDNR, Bridgeton Landfill is willing to properly abandon this well and to attempt to replace it within 50 feet of the existing location." Please note that the existing well D-14 is screened in the native alluvium and a replacement well should be screened in the same horizon regardless of overburden refuse.

**Condition #5: (Comment #9) *Screening and Decontamination Procedures*.** The new Section 3.4 – Contamination Surveys and Decontamination Procedures, is approved with the exception of a discrepancy in how solid radioactive waste will be handled. Section 3.4.2.1 Dry Decontamination, fifth and sixth sentences state, "Chunks of removed mud and dirt will be placed down the closest sounding holes to the extent practical. The remainder of material removed during dry decontamination will be placed in a separate container with hard plastic or metal sides and staged for retrieval and sampling." This procedure should be consistent with Section 3.4.2.4 Waste/Water Management, which states, "Any solid radioactive waste generated will be packaged and characterized for shipping. This material will be shipped to managed disposal/treatment facilities that are permitted to receive the waste." Under no circumstances should contaminated material be placed down open bore holes. Bentonite pellets should be used to plug all bore holes (see Condition #10).

**Condition #6: (Comment #10)** The intent of this comment was to state that regardless of results of the GCPT investigation; a location for the isolation barrier must be chosen that separates Operable Unit 1, Area 1 from the Bridgeton Sanitary Landfill North Quarry. In addition, the Isolation Barrier Construction Plan must be fully developed and ready to implement immediately, if triggered.

**Condition #7: (Comment #14) *Appendix D, Section 2.3, SFS Estimate of RIM Boundary*.** See Condition #1.

**Condition #8: (Comment #17) *Appendix D, Section 3.2.1.2.2, Gamma Sensor (Radiologically Impacted Material Calibration)*.** In addition to using PVC-38 and PVC-28 to correlate the readings obtained by the GCPT device, a location with gamma response similar to the Radiological Impacted Material (RIM) limit should be chosen to ensure an appropriate location for the isolation barrier can be selected based on sensitivity of the GCPT gamma sensor. For example PVC-36 has a downhole gamma reading of 15,000 counts per minute (cpm) at a depth of eight feet below ground surface. This would give a range of gamma responses which differ by an order of magnitude beginning with PVC-36 (15,000 cpm) to PVC-28 (132,000 cpm) to PVC-38 (1,298,000 cpm).

**Condition #9: (Comment #20) *Appendix D, Section 3.3.1 Land Clearing*.** The intent of the original comment was to prevent dust generation from the ground surface due to grinding equipment. Instead, use non-grinding equipment such as bobcat mounted shears or handheld equipment to clear/prune vegetation as stated in our original comment. There should be no visible dust emissions from the vegetation clearing activities.

**Condition #10: (Comment #25) *Appendix D, Section 3.3.4, GCPT Logging*.** Missouri Geological Survey has advised that no variance is needed to plug test holes with dry bentonite via gravity

Ms. Cecilia Tapia  
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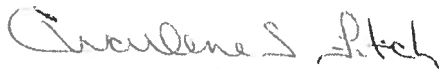
pouring. Their recommendation is to use pelletized bentonite with a food grade coating that dissolves in water, which slows the hydration rate of the bentonite allowing it to be poured through a water column. Use of pelletized bentonite also requires that the bentonite be hydrated in the unsaturated zone after each three feet of bentonite placement [10 CSR 23-4.060(9)(B)] with a minimum of three times as much potable water as bentonite.

**Condition #11: (Comment #28) Appendix D, Table 1.** The revised Table 1 contains all the necessary steps to evaluate, characterize and construct the isolation barrier. As an essential component of the overall contingency plan, timely completion of the GCPT investigation must occur as the overall objective is protection of human health and the environment. In addition, Table 1 of Appendix D is currently laid out as a series of events. Please review Table 1 for tasks that can be run on parallel tracks to ensure it is as expeditiously as possible.

As the GCPT investigation commences, please coordinate with us for potential oversight of field activities. If you have any questions or comments regarding this letter, please contact myself, Branden Doster or our Solid Waste Management Program Director, Chris Nagel at (573)526-3940.

Sincerely,

SOLID WASTE MANAGEMENT PROGRAM



Charlene S. Fitch, P.E.  
Chief, Engineering Section

CSF:dc

Enclosure

In cooperation with,

HAZARDOUS WASTE PROGRAM



Branden Doster, P.E.  
Chief, Federal Facilities Section

BD:dc

c: Mr. Brian Power, Environmental Manager, Republic Services, Inc.  
Mr. Brian Martz, Director of Engineering, Republic Services, Inc.  
Michael Beaudoin, P.E., Civil & Environmental Consultants, Inc.  
Mr. Ronald Hammerschmidt, U.S. Environmental Protection Agency, Region VII  
Mr. Dan Gravatt, U.S. Environmental Protection Agency, Region VII  
Mr. Joseph Binbeutel, Attorney General's Office  
Mr. Jonathan Garoutte, Department of Health and Senior Services

Ms. Cecilia Tapia

Bridgeton Landfill North Quarry Contingency Plan, Part 2

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Ms. Laura Yates, St. Louis County Department of Health

Ms. Kyra Moore, Air Pollution Control Program

Mr. Alan Reinkemeyer, Environmental Services Program

Mr. Larry Lehman, Chief, Compliance/Enforcement Section, SWMP

Ms. Brenda Ardrey, Chief, Operations Section, SWMP

St. Louis Regional Office via Electronic Shared File



**Missouri Department of Health and Senior Services**

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Gail Vasterling  
Acting Director



Jeremiah W. (Jay) Nixon  
Governor

September 16, 2013

Shawn Muenks, Program Manager  
Federal Facilities Section, RRA Unit  
Hazardous Waste Program  
Missouri Department of Natural Resources  
P.O. Box 176  
Jefferson City, MO. 65102-0176

Re: Feezor Engineering, Inc. responses to the Missouri Department of Health and Senior Services' comments on the document *Bridgeton Landfill North Quarry Contingency Plan – Part 2*; July 26, 2013; Appendix D and E.

Dear Mr. Muenks:

The Missouri Department of Health and Senior Services (DHSS) reviewed Feezor Engineering, Inc. (FEI) responses to DHSS' comments for Appendix D, *Isolation Barrier Schedule and Gamma Cone Penetration Test*, and Appendix E, *Gamma Cone Penetration Test (GCPT) Health and Safety Plan (HSP)*. FEI's responses adequately address DHSS' concerns for the GCPT, Phase I, investigation. DHSS will provide, under separate cover, comments on Phase II, which addresses soil coring.

If you have questions or comments, please contact Andrew McKinney at (573) 751-6102.

Sincerely,

Jonathan Garoutte, Chief  
Bureau of Environmental Epidemiology

JG/AM/vmp

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